The dominant habitat type, lacustrine, covers 19,851 acres (about 48 percent) of the project area. Tree-dominated habitats cover about 36 percent of the project area. Riparian woodlands along the Feather River, dominated by cottonwoods and willows, represent about 8 percent of the total wildlife habitat. The 12 least common habitat types (Douglas-fir, Sierra mixed conifer, dryland grain, montane riparian, deciduous orchard, valley oak woodland, evergreen orchard, irrigated hayfield, ponderosa pine, eucalyptus, pasture, and vineyard) occur on less than 1 percent of the project area. However, three of these uncommon habitat types (eucalyptus, montane riparian, and valley oak woodland) exhibit high species richness values (DWR 2003b).

Table 4.5-1. Summary of wildlife habitat acreages within the project area.

CWHR Habitat Type	Total Acres Within Project Area	Percentage of Project Area
Lacustrine	19,851.9	48.2
Blue oak/foothill pine	3,518.8	8.6
Valley foothill riparian	3,398.1	8.3
Montane hardwood	3,295.0	8.0
Montane hardwood/conifer	3,179.8	7.7
Annual grassland	2,751.5	6.6
Barren	1,394.4	3.4
Freshwater emergent wetland	911.6	2.2
Urban	868.2	2.1
Blue oak woodland	793.3	1.9
Riverine	452.9	1.1
Mixed chaparral	234.3	0.6
Douglas-fir	169.6	0.4
Sierra mixed conifer	112.5	0.3
Dryland grain	98.3	0.2
Montane riparian	54.3	0.13
Deciduous orchard	11.0	<0.1
Valley oak woodland	9.8	<0.1
Evergreen orchard	8.1	<0.1
Irrigated hayfield	3.3	<0.1
Ponderosa pine	3.2	<0.1
Eucalyptus	2.6	<0.1
Pasture	0.7	<0.1
Vineyard	0.2	<0.1

CWHR = California Wildlife Habitat Relationships database
Source: DWR 2003b

Habitat types in the project area have undergone varying degrees of disturbance from both natural and human-induced changes. Pre-project disturbances related to land management practices (fire/logging) may be responsible for the preponderance of small to medium sized classes of tree habitat types, and the lack of decadent sized classes of chaparral stands indicate recent disturbance. Valley foothill riparian habitat along the Feather River has been disturbed since the 1800s, when hydraulic gold mining occurred in the area.

A brief description of the predominant habitat types within the project area is presented below.

Lacustrine Habitat

This habitat type includes lakes, reservoirs, and ponds greater than 5 acres in size that contain standing water (Mayer and Laudenslayer 1988). Lacustrine habitat is subdivided into the limnetic zone (deep open water), littoral zone (shallow-water areas where light penetrates to the bottom), and shore (water border with less than 2 percent vegetative cover). Lacustrine habitat provides all of the life history requirements (reproduction, food, water, and cover) for 150 wildlife species in California (Mayer and Laudenslayer 1988). Waterfowl use open-water areas for resting and feeding. Osprey, cormorants, bald eagle, mergansers, and gulls forage in open-water habitats. Grebes, herons, and diving ducks forage in the littoral zone. Swallows, bats, and swifts forage over lacustrine habitat. Banks associated with lacustrine habitat can provide cover or reproductive habitat for western pond turtle, river otter, and beaver. Lacustrine habitat is present in the project area at Lake Oroville, the Diversion Pool, Thermalito Forebay, and Thermalito Afterbay, and in ponded habitat along the Feather River.

Montane Hardwood Habitat

This habitat type is dominated by a pronounced hardwood layer with an infrequent and poorly developed shrub understory. Representative wildlife species include California newt, Nashville warbler, yellow-rumped warbler, mountain quail, black-headed grosbeak, and black bear. Discontinuous patches of montane hardwood habitat exist within the project area; habitat can be found on steep and rocky substrates in the upper elevations of the project area and is most common on north-facing slopes on the upper arms of Lake Oroville. This habitat type becomes increasingly common at higher elevations upslope from the project area.

Blue Oak/Foothill Pine Habitat

This habitat type exhibits high structural and plant species diversity because of the presence of multilayered tree canopies, shrub understory, and herbaceous ground cover. Approximately 130 wildlife species are known to use this habitat type for reproduction in the western Sierra Nevada (Mayer and Laudenslayer 1988). Common wildlife species include western fence lizard, western rattlesnake, acorn woodpecker, plain titmouse, western bluebird, black-tailed deer, Cooper's hawk, wild turkey, and lark sparrow. Blue oak/foothill pine habitat is the most common habitat type in the project area above 900 feet elevation.

Mature Valley/Foothill Riparian Habitat

This habitat type is structurally composed of a dominant deciduous overstory (California sycamore, valley oak, and cottonwood); an understory tree layer (white alder, Oregon ash); and a shrub layer (willows, poison oak, elderberries). Riparian habitat provides food, water, cover, and reproduction areas for a wide variety of California wildlife species—50 reptiles and amphibians, 55 mammals, and 147 birds (Mayer and

Laudenslayer 1988). Riparian habitat also provides migration and dispersal corridors and thermal cover for many species. The extensive riparian habitat present within the Oroville Wildlife Area (OWA) is the largest remaining block of riparian habitat along the Feather River and provides breeding habitat for a variety of neotropical migrants. These habitats also serve as nursery areas for many wildlife species, including two large mixed heron/egret rookeries. Numerous wildlife species are largely dependent on valley/foothill riparian habitat, among them red-shouldered hawk, western yellow-billed cuckoo, ringtail, yellow-breasted chat, and mink. Extensive stands of mature valley/foothill riparian habitat occur within the project area along the Feather River downstream of the City of Oroville. Narrow strips of riparian habitat also exist in association with the tributaries to Lake Oroville.

Annual Grassland Habitat

This habitat type is composed primarily of annual grasses and forbs and exists in areas that receive less than 40 inches of precipitation per year. Moist areas within annual grasslands can support perennial species like purple needlegrass and Idaho fescue. Vernal pools can occur in annual grassland habitat where depressions are underlain by impervious clay or hardpan soils. Common wildlife species include black-tailed jackrabbit, California ground squirrel, gopher snake, western fence lizard, California vole, badger, western kingbird, burrowing owl, horned lark, western meadowlark, Brewer's blackbird, American kestrel, turkey vulture, and northern harrier. Annual grassland habitat occurs around Thermalito Forebay, Thermalito Afterbay, and the Power Canal, in upland locations along the Feather River, and in isolated patches within the blue oak/foothill pine habitat around Lake Oroville.

Barren Habitats

These habitat areas are defined as areas with less than 2 percent herbaceous cover and less than 10 percent tree cover. Barren areas within the project area are mainly dredger tailings along the Feather River and in the OWA, unvegetated gravel bars, reservoir drawdown zones, and rock outcrops. Common wildlife species include killdeer, gulls, terns, western fence lizard, and western rattlesnake.

Emergent Wetland Habitats

These habitat areas are dominated by short, erect, rooted hydrophytes (cattail, tule, bulrush) and occur in waters less than 6 feet deep. Stands tend to be dense and structurally simple. Seasonal flooding restricts species diversity to those species adapted to anaerobic soil conditions. Emergent wetlands are a successional community that develops from open water to upland habitat over time. Erosion rates control the rate of successional change. Freshwater emergent wetlands can provide habitat for more than 160 species of birds in California as well as key habitat for numerous species of reptiles, amphibians, and mammals (Mayer and Laudenslayer 1988). Characteristic species include red-winged blackbird, giant garter snake, mallard, muskrat, short-eared owl, and bullfrog. Strips of emergent wetland habitat are found around Thermalito Afterbay and Thermalito Forebay, within dredger ponds in the OWA,

and in backwater areas along the Feather River. Emergent wetlands are generally absent within the drawdown zone of Lake Oroville or within the steeper drainages upslope from the reservoir.

Urban/Disturbed Habitat

This habitat type is structurally divided into five classes: tree grove, street strip, shade tree/lawn, lawn, and shrub cover (Mayer and Laudenslayer 1988). Urban habitats frequently exhibit high structural diversity, high diversity of plant species, and extensive edge areas. Both native and non-native plant species exist, but non-native annual and perennial species frequently dominate. Maintenance normally precludes community succession in urban/residential habitat. Common wildlife species associated with urban/residential habitat include European starling, house sparrow, rock dove, northern mockingbird, house finch, gopher snake, western fence lizard, striped skunk, and opossum. Urban/disturbed habitat exists within the project area. Furthermore, conversion of annual grassland, blue oak/foothill pine woodland, and valley/foothill riparian habitat to urban/disturbed habitat continues to occur around the perimeter of the project area.

Riverine Habitat

The structure of riverine habitat (i.e., stream and river habitat) consists of open water (greater than 2 feet in depth), submerged nearshore areas, and banks with less than 10 percent canopy cover (Mayer and Laudenslayer 1988). Waterfowl use open-water areas for resting. Osprey, cormorants, and gulls forage in open-water habitats. Shorebirds, including herons, egrets, and sandpipers, forage along the submerged nearshore areas. Insectivorous species, including swallows and phoebes, forage over riverine habitat. Banks associated with riverine habitat can provide cover or nesting substrate for bank swallow, belted kingfisher, muskrat, and beaver. Riverine habitat occurs throughout the project area along the Feather River and its tributaries.

The 11,000-acre OWA, west of the City of Oroville, is managed by DWR and DFG for wildlife habitat and recreational activities. Lacustrine, riverine, freshwater emergent, and valley foothill riparian habitats, as well as annual grassland and dryland grain/seed crops occur within the OWA. This area includes 6,000 acres in and around Thermalito Afterbay and the 5,000 acres adjacent to and straddling 12 miles of the Feather River. Past programs for enhancing wildlife habitat have included wetland habitat enhancements, a wood duck/wildlife nest box program, and dryland farming for nesting cover and improved wildlife forage. The quality of habitat in this area is adversely affected by historic dredger tailings within the Feather River floodplain.

Wildlife Nursery Habitats

Several locations within the project area support important wildlife nest colonies or nursery areas where high wildlife production occurs within a small geographic area. Examples include mixed Clark's and western grebe nesting colonies on Thermalito

Afterbay and mixed heron/egret rookeries along the Feather River and near Lime Saddle.

Wildlife Species

The CWHR database was used to predict the occurrence of wildlife species within project area habitats. Observations of species were also noted during relicensing studies. CWHR modeling results included in the SP-T4 report (DWR 2003) indicate that 334 wildlife species may occur within the size and density classes of habitat types present within the project area: 13 amphibians, 22 reptiles, 235 birds, and 64 mammals (including 14 non-native species), and 55 recreationally and/or commercially important species.

Non-native Wildlife Species

Fourteen non-native vertebrate wildlife species—six birds, seven mammals, and one amphibian—may occur within the project area (Table 4.5-2). Several of these species were introduced by DFG as harvest species, or are currently managed as harvest species.

Relicensing studies summarized in the SP-T8 report (DWR 2003c) indicate that bullfrog and wild turkey exist in the project area at population levels that may adversely affect native species or that conflict with DPR management goals. Bullfrogs can be found in high densities within the dredger ponds of the OWA. These population levels may be a factor in the low occurrence or absence of native ranids. Extensive experimentation in California and elsewhere has not yielded viable methods of controlling bullfrog. DPR considers the relatively high population of non-native wild turkey in the Loafer Creek area as inappropriate in a State Park setting.

Table 4.5-2. Non-native vertebrate wildlife species that may occur in the project area.

Common Name	Scientific Name	Status
Black rat	*Rattus rattus*	—
Bobwhite quail	*Colinus virginianus*	DFG Harvest
Bullfrog	*Rana catesbeiana*	DFG Harvest
European starling	*Sturnus vulgaris*	—
Feral pig	*Sus scrofa*	DFG Harvest
House mouse	*Mus musculus*	—
House sparrow	*Passer domesticus*	—
Muskrat	*Ondatra zibethicus*	DFG Harvest
Norway rat	*Rattus norvegicus*	—
Red fox	*Vulpes vulpes*	—
Ring-necked pheasant	*Phasianus colchicus*	DFG Harvest
Rock dove	*Columba livia*	—
Virginia opossum	*Didelphis virginiana*	DFG Harvest
Wild turkey	*Meleagris gallopavo*	DFG Harvest

Source: DWR 2003c

Commercially and Recreationally Important Species

The project area provides seasonal or year-round habitat for a variety of commercially or recreationally important wildlife species. Fifty-five species classified as harvest species by DFG may occur within the project area (Table 4.5-3). Black-tailed deer are an important big-game species in eastern Butte County. The project area contains a portion of the winter range of two migratory deer herds (Bucks Mountain and Mooretown herds) as well as a small resident population.

Table 4.5-3. Commercially or recreationally important wildlife species that may occur in the project vicinity.

Common Name	Scientific Name	Habitat
MAMMALS		
American badger	*Taxidea taxus*	AG, BO/FP
Beaver	*Castor canadensis*	VFR, R, L
Black bear	*Urus americanus*	PP, MC, MH/C
Black-tailed deer	*Odocoileus hemionus*	VFR, PP, BO/FP, MC, MH/C
Black-tailed hare	*Lepus californicus*	AG
Bobcat	*Felis rufus*	All terrestrial
Brush rabbit	*Sylvilagus bachmani*	MC, VFR
Coyote	*Canis latrans*	All terrestrial
Desert cottontail	*Sylvilagus audubonii*	AG, BO/FP
Douglas tree squirrel	*Tamiasciurus douglasii*	PP, MH/C
Ermine	*Mustela erminea*	PP, MH/C
Feral pig	*Sus scrofa*	AG, BO/FP, VFR
Gray fox	*Unocyon cinereoargenteus*	VFR, MC, BO/FP, PP, MH/C
Long-tailed weasel	*Mustela frenata*	PP, BP/FP, MC, VFR, MH/C
Mink	*Mustela vison*	R, VFR
Raccoon	*Procyon lotor*	All terrestrial
Striped skunk	*Mephitis mephitis*	All terrestrial
Virginia opossum	*Didelphis virginina*	AG, FEW,VFR
Western gray squirrel	*Sciurus griseus*	BO/FP, PP, VFR, MH/C
Western spotted skunk	*Spilogale gracilis*	MC, VFR, BO/FP, MH/C
AMPHIBIANS		
Bullfrog	*Rana catesbeiana*	FEW, R, L
BIRDS		
American coot	*Fulica americana*	AG, FEW
American crow	*Corvus brachyrhynchos*	AG, CR, U, O/V
American wigeon	*Anas americana*	FEW, R, L, AG
Band-tailed pigeon	*Columba fasciata*	MH/C
Barrow's goldeneye	*Bucephala islandica*	FEW, R, L
Blue-winged teal	*Anas discors*	FEW, AG, L, R
Bufflehead	*Bucephala albeola*	FEW, L, R
California quail	*Callipepla californica*	VFR, MH/C, AG, BO/FP, U, MC
Canada goose	*Branta canadensis*	R, FEW, AG, L, C
Canvasback	*Aythya affinis*	FEW, L
Cinnamon teal	*Anas cyanoptera*	FEW, L
Common goldeneye	*Bucephala merganser*	R
Common merganser	*Mergus merganser*	R, L, FEW
Common snipe	*Gallingo gallingo*	FEW, C

Table 4.5-3. Commercially or recreationally important wildlife species that may occur in the project vicinity.

Common Name	Scientific Name	Habitat
Eurasian wigeon	*Anas americana*	FEW, L, R, AG
Gadwall	*Anas strepera*	FEW, L, R
Greater white-fronted goose	*Anser albifrons*	FEW, AG, C
Green-winged teal	*Anas crecca*	FEW, L, R
Hooded merganser	*Lophodytes cucullatus*	FEW, L, R
Lesser scaup	*Aythya affinis*	FEW, L
Mallard	*Anas platyrhynchos*	FEW, R, L, C
Mountain quail	*Oreortyx pictus*	VFR, MC, MH/C
Mourning dove	*Zenaida macroura*	AG, VFR, BO/FP, R, C, U
Northern pintail	*Anas acuta*	FEW, L
Northern shoveler	*Anas clypeata*	FEW, AG, L, C
Redhead	*Aythya americana*	FEW, L
Ring-necked duck	*Aythya collaris*	L, R
Ring-necked pheasant	*Phasianus colchicus*	FEW, AG, C
Ross' goose	*Chen rossii*	FEW, AG, C
Ruddy duck	*Oxyura jamaicensis*	FEW, L, R
Snow goose	*Chen caerulescens*	FEW, C
Tundra swan	*Cygnus columbianus*	L, AG
Wild turkey	*Melaegris gallopavo*	BO/FP, MH/C, PP, VFR
Wood duck	*Aix sponsa*	L,R

HABITAT KEY

AG = annual grassland	MH/C = montane hardwood/conifer
BO/FP = blue oak/foothill pine	O/V = orchard/vineyard
C = cropland	PP = ponderosa pine
FEW = freshwater emergent wetland	R = riverine
L = lacustrine	U = urban/disturbed
MC = mixed chaparral	VFR = valley/foothill riparian

Sources: CWHR modeling results for Butte County; DWR 2004d

Waterfowl are the most important group of wildlife (both commercially and recreationally) in the lower elevation areas of Butte County. Lands managed for commercial grain production or natural wetlands support high wintering densities of ducks, geese, swans, and shorebirds. These lands also provide nesting and brooding habitat for waterfowl. Waterfowl hunting access fees provide landowners with financial incentives to manage for waterfowl. Portions of the OWA within the FERC Project boundary are managed by DFG to provide habitat for nesting and wintering waterfowl. Approximately 3 percent of the recreational use of the OWA is related to hunting (DWR 2004e). The Thermalito Complex provides resting and foraging habitat for open-water and diving waterfowl species (ruddy duck, bufflehead, scaup, ring-necked duck, common goldeneye, and common merganser), which is generally lacking in surrounding agricultural areas.

Upland game species—mourning dove, wild turkey, ring-necked pheasant, and several species of quail—can be found in the project area and provide hunting opportunities on adjacent private lands as well as on some public lands, including the OWA.

Numerous furbearers—badger, mink, beaver, raccoon, gray fox, weasels, muskrat, bobcat, and opossum—may occur in the project area. However, current commercial harvest of these species within the project area is believed to be negligible. Use of steel leg-hold traps is currently prohibited in California.

Annual non-consumptive use (birdwatching, sightseeing, or nature study) within the project area is estimated to be greater than all wildlife-related consumptive uses combined (DWR 2004e). Students from local colleges, high schools, and elementary schools use the project area for nature/biological education and study.

Terrestrial Resources Existing Project Conditions

Several current project operations, land management practices, and project-related recreational activities affect wildlife and habitat in the project area, either directly or indirectly. Short- and long-term effects result in changes to the dynamics and stability of existing wildlife communities, including changes in species diversity and wildlife distribution, and may affect reproductive success. Direct and indirect effects may result from the following:

- *Lake Oroville Water Level Fluctuations.* Water levels in Lake Oroville fluctuate in response to needs for flood management, water quality and temperature needs, environmental commitments, and as a result of water withdrawals for irrigation or municipal water use. Daily and seasonal fluctuations in water levels generally favor the establishment of upland plant communities along the shoreline instead of riparian vegetation more typically associated with natural lakes. The zone exposed in late summer, fall, and winter by reservoir drawdown usually does not support any vegetation and may be subject to erosion. Areas exposed by a spring/early summer drawdown may support some vegetation if conditions are favorable, but plant biomass and diversity within this habitat are usually low and can be dominated by non-native, weedy species that provide limited, poor quality wildlife habitat (DWR 2004c). In addition, the creation of barren zones by reservoir drawdown can affect the ability of wildlife species to access water, which in turn causes them to be more vulnerable to predation.

- *Thermalito Complex Water Level Fluctuations.* Relatively minor water level fluctuations occur at the Diversion Pool and Thermalito Forebay, and within dredger ponds associated with the OWA. However, Thermalito Afterbay water level fluctuations are more extreme and can adversely affect critical life stages of certain wildlife species, including nesting and brooding waterfowl and nesting grebes (DWR 2004c). Exposed mudflats that occur during some Thermalito Afterbay fluctuations provide habitat for a variety of wildlife species, but they can also increase predation and loss of individuals that attempt to traverse them to reach either cover or open water.

- *Feather River Flow Fluctuations.* Dams and hydroelectric project operations affect downstream hydrology by altering flow magnitude, timing, and duration. Fisheries operations and other procedures to accommodate the needs of specific

species may also affect the timing and quantity of flows. These flow variations often affect streambank habitat, including bank swallow nesting habitat, by altering erosion and sediment deposition processes and by affecting recruitment and survival of riparian plant species. July project releases can increase river stage by more than 3 feet, potentially inundating portions of bank swallow nest colonies outside the FERC Project boundary when small numbers of prefledged young are present (DWR 2004c). In addition, hydroelectric project operations can affect wetlands that may be hydrologically connected to the river. Changes to riparian and wetland areas can affect the amount, quality, and connectivity of habitat available to wildlife; the greatest effects are on obligate species that depend on these habitats for food and cover. Further, spring/summer flow fluctuations can result in direct mortality of bank nesting species.

- *Ground/Soil Disturbance and Habitat Degradation from Operations and Maintenance Activities.* Project maintenance and/or operations may affect wildlife habitat by disturbing surfaces, resulting in direct elimination of habitat, degradation of habitat quality, and/or displacement of wildlife (DWR 2004c). Effects on habitat may be direct, through removal and development, or indirect, through disturbance or nonselective application of herbicides and pesticides that allow establishment of noxious weeds and other non-native wildlife species.

- *Disturbance from Project-Related Recreation.* Wildlife and wildlife habitat may be directly and indirectly affected by project-related recreation (DWR 2004e). Development and use of recreational facilities causes direct loss of habitat as vegetation is removed or altered and soil is disturbed. Project-related recreation also promotes the establishment of non-native plant species, which alter habitat structure and composition. Recreational activity often results in accumulation of trash and garbage, attracting non-native wildlife species, which may then displace resident wildlife. The availability of additional food can also change the composition and population dynamics of native species, increasing the abundance of raccoons, rodents, gulls, and crows. Additionally, recreational developments typically include nocturnal lighting and structures, which may cause resident wildlife to avoid the area. Increased human presence can also cause avoidance by some resident wildlife.

4.5.1.2 Special-Status Wildlife Species

Overview

This section identifies special-status wildlife species and their habitats that may occur in the project area. Special-status wildlife species include species listed under FESA and CESA, candidate species proposed for listing under FESA, federal and State species of concern, federal land management agencies' sensitive species, and State fully protected species.

Listed Wildlife Species

Seventy-one special-status wildlife species may occur within the project vicinity during some period of the year (Table 4.5-4). A discussion of federally listed species is presented below, followed by a discussion of State-listed species.

Table 4.5-4. Special-status species with the potential to occur in the project vicinity.

Special-Status Species	Status
American badger (*Taxidea taxus*)	CSC
American white pelican (*Pelecanus erythrorhynos*)	CSC
Bald eagle (*Haliaeetus leucocephalus)*	FT, SE, FP
Bank swallow (*Riparia riparia*)	ST
Barrow's goldeneye (*Bucephala islandica*)	CSC
Bell's sage sparrow (*Amphispiza belli belli*)	FSC, CSC
Black-crowned night heron (*Nycitcorax nycticorax*)	BLM
Black swift (*Cypseloides niger*)	FSC, CSC
Black tern (*Chilidonas niger*)	CSC
Burrowing owl *(Athene cunicularia)*	CSC, FSC, BLM
California gull (*Larus californicus*)	CSC
California horned lark (*Eremophila alpestris actia*)	CSC
California red-legged frog (*Rana aurora draytonii*)	FT, CSC
California spotted owl (*Strix occidentalis caurina*)	FSC, CSC, FS, BLM
California tiger salamander *(Ambystoma californiense)*	FT, CSC
Caspian tern *(Sterna caspia)*	FSC
Coast horned lizard (*Phrynosoma coronatum*)	CSC, FS
Common loon (*Gavia immer*)	CSC
Conservancy fairy shrimp (*Branchinecta conservatio*)	FE
Cooper's hawk (*Accipiter cooperi*)	CSC
Double-crested cormorant (*Phalacrocorax auritus*)	CSC
Ferruginous hawk (*Buteo regalis*)	FSC, CSC, BLM
Foothill yellow-legged frog (*Rana boylii*)	CSC, BLM, FS
Fringed myotis (*Myotis thysanodes*)	BLM
Giant garter snake *(Thamnophis couchi gigas)*	FT , ST
Golden eagle (*Aquila chrysaetos*)	CSC, FSC, BLM. FP
Greater sandhill crane (*Grus canadensis tabida*)	ST, FS, FP
Lawrence's goldfinch (*Carduelis lawrencei*)	FSC
Lewis's woodpecker (*Melanerpes lewis*)	FSC
Loggerhead shrike (*Lanius ludovicianus*)	FSC, CSC
Long-billed curlew (*Numenius americanus*)	FSC, CSC
Long-eared myotis (*Myotis evotis*)	BLM
Long-eared owl (*Asio otus*)	CSC
Marysville kangaroo rat (*Dipodomys californicus eximus*)	CSC, BLM
Merlin (*Falco columbarius*)	CSC
Mountain yellow-legged frog *(Rana muscosa)*	FC, CSC
Northern goshawk (*Accipiter gentilis*)	CSC, FS
Northern harrier (*Circus cyaneus*)	CSC
Northwestern pond turtle (*Clemmys marmorata marmorata*)	CSC, FS
Occult little brown bat (*Myotis occultus*)	CSC
Olive-sided flycatcher *(Contopus cooperi)*	FSC
Osprey (*Pandion haliaetus*)	CSC
Pale big-eared bat (*Corynorhinus townsendii pallescens*)	FSC, CSC, BLM, FS

Table 4.5-4. Special-status species with the potential to occur in the project vicinity.

Special-Status Species	Status
Pallid bat (*Antrozous pallidus*)	CSC, FS, BLM
Peregrine falcon (*Falco peregrinus anatum*)	SE, FSC, FS, FP
Prairie falcon (*Falco mexicanus*)	FSC, CSC
Purple martin (*Progne subis*)	CSC
Rufous hummingbird (*Selasphorus rufus*)	FSC
San Joaquin pocket mouse (*Perognathus inornatus inornatus*)	BLM
Sharp-shinned hawk (*Accipiter striatus*)	CSC
Short-eared owl (*Asio flammeus*)	CSC
Small-footed myotis (*Myotis ciliolabrum*)	BLM
Spotted bat (*Euderma maculatum*)	CSC, BLM
Swainson's hawk (*Buteo swainsoni*)	ST, FSC, FS
Townsend's big-eared bat (*Corynorhinus townsendii townsendii*)	CSC, FS, BLM
Tricolored blackbird (*Agelaius tricolor*)	FSC, CSC, BLM
Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)	FT
Vaux's swift (*Chaetura vauxi*)	CSC
Vernal pool fairy shrimp (*Branchinecta lynchi*)	FT
Vernal pool tadpole shrimp *(lepidurus packardi)*	FE
Western burrowing owl (*Athene cunicularia*)	FSC, CSC, BLM
Western least bittern (*Ixobrychius exilis*)	CSC
Western mastiff bat (*Eumops perotis*)	CSC, BLM
Western red bat (*Lasiurus blossevillii*)	FS
Western spadefoot (*Scaphiopus hammondii*)	CSC, BLM
Western yellow-billed cuckoo *(Coccyzus americanus)*	SE, FC, FSC, FS
White-faced ibis (*Plegadis chihi*)	CSC
White-tailed kite (*Elanus leucurus*)	FP
Yellow-breasted chat (*Icteria virens*)	CSC
Yellow warbler (*Dendroica petechia brewsteri*)	CSC
Yuma myotis (*Myotis yumanensis*)	BLM

STATUS KEY

Federal Listing Categories:
BLM = U.S. Bureau of Land Management Sensitive Species
FC = Federal Candidate
FE = federally listed as Endangered
FS = U.S. Forest Service Sensitive Species
FSC = Federal Species of Concern
FT = federally listed as Threatened

California Listing Categories:
CSC = California Species of Special Concern
FP = State Fully Protected Species
SE = State listed as Endangered
ST = State listed as Threatened

Source: California Natural Diversity Database 2006

Federally Listed Species

USFWS issued a letter on January 28, 2004 (Appendix A of the Biological Assessment [BA] found in Appendix E of the PDEA for the Oroville Facilities [DWR 2005]), that listed the species that may occur in the project area. Ten wildlife species protected under FESA may occur within the project vicinity (Table 4.5-4). No designated or proposed critical habitat for these federally listed species exists within the project area.

Informal consultation with USFWS occurred throughout the collaborative ALP for the Oroville Facilities, including Plenary and Work Group meetings, beginning November 12, 2000. The *Draft Programmatic Biological Assessment for Terrestrial and Non-Anadromous Species* (DWR 2004f) was submitted to USFWS on May 19, 2004.

Relicensing studies indicate the presence or occurrence of potentially suitable habitat within the project area for eight species currently listed or proposed for listing under FESA: bald eagle, California red-legged frog, giant garter snake, valley elderberry longhorn beetle, vernal pool tadpole shrimp, Conservancy fairy shrimp, western yellow-billed cuckoo, and vernal pool fairy shrimp (DWR 2004c). Both the California tiger salamander and the mountain yellow-legged frog were determined not to have potentially suitable habitat within the project area.

Habitats were delineated by converting vegetation mapping for the project area to the CWHR habitat classification system. Surveys of suitable habitats for threatened and endangered species as well as visual surveys for the occurrence of the species were conducted in accordance with applicable USFWS or DFG protocols in 2002 (valley elderberry longhorn beetle, California red-legged frog, giant garter snake, bald eagle), 2003 (bald eagle, vernal pools) and 2004 (bald eagle, vernal pools).

Information about suitable habitats and species occurrence in the project area and within a 1-mile radius, along with species life histories, was compiled from the CWHR database and the California Natural Diversity Database (CNDDB). Other national, State, and county biological survey records and databases, as well as websites, printed articles, and discussions with local wildlife agencies were also consulted.

Detailed descriptions and analysis are included in the report for SP-T2, Project Effects on Special Status Wildlife Species (DWR 2004c), and in the *Draft Programmatic Biological Assessment for Terrestrial and Non-Anadromous Species* in Appendix E of the PDEA (DWR 2005).

Bald Eagle. USFWS listed the southern bald eagle as an Endangered species under FESA in March 1967. In 1995, after a federal status review, this species' status was downlisted to Threatened. Bald eagle is currently proposed for federal delisting (USFWS 1999). This species is currently State listed as Endangered.

Bald eagles historically nested throughout California near sea coasts, major rivers, and lakes. More than 160 pairs currently nest in California (up from 28 pairs in 1978); hundreds of additional bald eagles migrate into California during the winter.

Nesting habitat is described as old-growth trees and snags in remote mixed stands near water (Zeiner et al. 1990a). In a 1979 survey of 95 bald eagle nest sites in Northern California, 87 percent were in dominant or codominant ponderosa pine or sugar pine (Lehman 1979). Associated stands were generally open (less than 40 percent canopy cover), and within 1 mile of a water body. Approximately one-third of the nest sites were within 0.1 mile of a water body, and 85 percent of the nests had an unobstructed view of the water body. Seventy percent of the nests were associated with reservoirs.

Four active bald eagle nest territories currently exist within the FERC Project boundary, with one additional active nest territory present on the North Fork Feather River upstream of the project area (DWR 2004c). Two of the active nests are on Lake Oroville, one nest is on the Diversion Pool, and one nest is located on the Feather River

near the downstream FERC Project boundary. Population monitoring (2002–2006) indicates that reproduction meets or exceeds the goals of the USFWS *Pacific Bald Eagle Recovery Plan* (USFWS 1986).

Extensive use of Lake Oroville by bald eagles wintering in the area has been documented. Regular wintering use has also been observed at other project water bodies including the Feather River, the Diversion Pool, Thermalito Afterbay, Thermalito Forebay, and OWA dredger ponds. One communal winter roost location has been identified on the North Fork Arm of Lake Oroville.

Giant Garter Snake. USFWS listed the giant garter snake as a Threatened species under FESA in October 1993. This species has also been listed as Threatened under CESA since 1971.

The giant garter snake is endemic to the wetlands of California's Central Valley. Its historic range is believed to include valley floor wetlands from the vicinity of Butte County south to near Bakersfield. Historically, giant garter snakes were found in natural wetlands associated with flood basins.

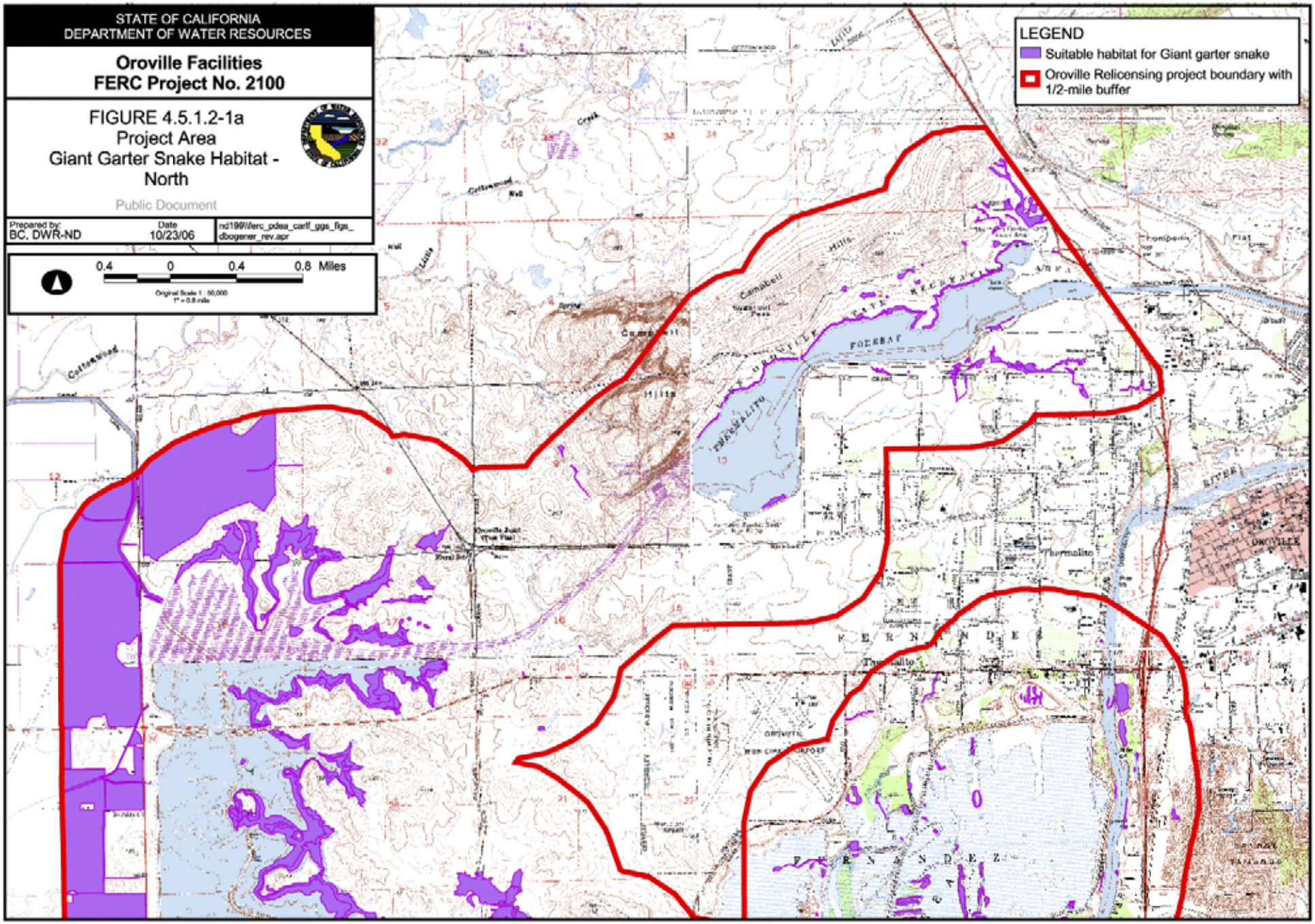
Thirteen sub-populations of giant garter snake have been identified; however, population information is generally lacking. The northern extent of the current range of this species is described as Sacramento and Contra Costa counties (Fox 1951), to near Gridley (Hansen and Brode 1980), to the vicinity of Chico (Rossman and Stewart 1987). In addition to natural wetlands, giant garter snakes are now found in agricultural wetlands (rice), managed wetlands (duck clubs and federal and State refuges), agricultural drains, ponds, and other artificial waterways.

The *Draft Recovery Plan for the Giant Garter Snake* (Miller and Hornaday 1999) describes the essential habitat components for this aquatic reptile as:

- Adequate water during the snakes' active season (early spring through mid-fall) to support dense populations of prey;
- Presence of emergent herbaceous cover (cattails and tules) for escape cover and foraging habitat;
- Grassy upland habitat adjacent to waterways for basking; and
- Higher elevation upland habitat for floodflow refuge.

This species is absent from larger rivers, riparian woodlands, and wetlands with sand, rock, or gravel substrates (Miller and Hornaday 1999).

Suitable giant garter snake habitat was identified within portions of Thermalito Forebay, Thermalito Afterbay, the OWA, and lands subject to rice agriculture adjacent to Thermalito Afterbay but outside the FERC Project boundary (Figures 4.5.1.2-1a through 4.5.1.2-1c). About 4,280 acres of suitable habitat have been identified within the project area (DWR 2004c). No giant garter snakes were observed during the course of the


STATE OF CALIFORNIA
DEPARTMENT OF WATER RESOURCES
Oroville Facilities
FERC Project No. 2100
FIGURE 4.5.1.2-1a
Project Area
Giant Garter Snake Habitat -
North
Public Document
Prepared by:
BC, DWR-ND
Date
10/23/06
nd199\ferc_pdea_carlf_ggs_figs_
dbogener_rev.apr
0.4 0 0.4 0.8 Miles
LEGEND
Suitable habitat for Giant garter snake
Oroville Relicensing project boundary with
1/2-mile buffer